



US010162203B2

(12) **United States Patent**  
**Gere**

(10) **Patent No.:** **US 10,162,203 B2**  
(45) **Date of Patent:** **Dec. 25, 2018**

(54) **SYSTEMS AND METHODS FOR ELECTRONICALLY CONTROLLING THE VIEWING ANGLE OF A DISPLAY**

(56) **References Cited**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **15/336,134**  
(22) Filed: **Oct. 27, 2016**

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(65) **Prior Publication Data**  
US 2017/0045764 A1 Feb. 16, 2017

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**Related U.S. Application Data**

(63) Continuation of application No. 12/622,268, filed on Nov. 19, 2009, now Pat. No. 9,507,198.

(51) **Int. Cl.**  
**G02F 1/13** (2006.01)  
**G02F 1/29** (2006.01)  
**G02F 1/137** (2006.01)  
**G02F 1/1335** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **G02F 1/1323** (2013.01); **G02F 1/137** (2013.01); **G02F 1/133504** (2013.01); **G02F 1/292** (2013.01)

(58) **Field of Classification Search**  
CPC ..... G02F 1/1323; G02F 1/133504; G02F 1/13471; G02F 1/1347; G02F 1/292; G02F 1/31; G02F 1/311; G02F 2201/305; G02B 27/2228; G02B 27/4272; G02B 26/0808

See application file for complete search history.

**ABSTRACT**

Systems and methods for electronically controlling the viewing angle of a display using liquid crystal optical elements are provided. Each liquid crystal optical element may be associated with a respective scattering module and may selectively steer a device generated light beam to one of two or more scattering regions of its associated scattering module. When a scattering region receives a steered light beam, the steered light beam may be scattered into a viewing cone having at least one viewing angle defined by a characteristic of that scatter region. Each liquid crystal optical element may be made from one or more suitable liquid crystal materials that can be controlled electronically to vary the effective index of refraction of one or more different regions of the liquid crystal optical element, thereby steering incoming light towards a particular one of two or more scattering regions of an associated scattering module.

**19 Claims, 9 Drawing Sheets**

